

What is claimed is:

1 1. A DNA sequence encoding a polypeptide of the
2 formula

WYBAZCX

4 wherein WYBAZCX is composed of the polypeptide
5 segments shown in Figure 31 (SEQ ID Nos. 136-139, 141-147,
6 160, 161, and 163); wherein W comprises polypeptide segment
7 F, or is absent; wherein Y comprises polypeptide segment E,
8 or is absent; wherein Z comprises polypeptide segment G or
9 is absent; and wherein X comprises polypeptide segments C/D
10 HKL, C/D H, C/D HL, C/D D, C/D' HL, C/D' HKL, C/D' H, C/D'
11 D, C/D C/D' HKL, C/D C/D' H, C/D C/D' HL, C/D C/D' D, C/D D'
12 H, C/D D' HL, C/D D' HKL, C/D' D' H, C/D' D' HKL, C/D C/D'
13 D' H, C/D C/D' D' HL, C/D C/D' D' HKL, or C/D' D' HL;
14 provided that, either

15 a) at least one of F, Y, B, A, Z, C, or X is of
16 bovine origin; or

17 b) Y comprises polypeptide segment E; or

c) X comprises polypeptide segments C/D HKL, C/D D,

19 C/D' HKL, C/D C/D' HKL, C/D C/D' D, C/D D' H, C/D D' HL, C/
 20 D' HKL, C/D' D' H, C/D' D' HKL, C/D C/D' D' H, C/D C/D' D'
 21 HL, C/D C/D' D' HKL, C/D' H, C/D C/D' H, or C/D C/D' HL.

1 2. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D HKL having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-142,
4 146, 147, 160, 161).

1 3. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D' H having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143,
4 146, 160).

1 4. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D D having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142,
4 144, 160).

1 5. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D' HKL having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141,
4 143, 146, 147, 160, 161). 

1 6. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D C/D' HKL having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-
4 143, 146, 147, 160, 161).

1 7. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D C/D' H having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-
4 143, 146, 160).

1 8. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D C/D' HL having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-
4 143, 146, 147, 160).

1 9. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D C/D' D having the amino
3 acid sequences shown in Figure 31 (SEQ ID NOS. 136-139, 141-
4 144, 160).

1 10. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D D'H having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-142,
4 145, 146, 160).

11. The DNA sequence of claim 1, wherein X
comprises polypeptide segments C/D D' H L having the amino
acid sequences shown in Figure 31 (SEQ ID NOS. 136-139, 141-
142, 145, 146, 147, 150).

1 12. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D D'H K L having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-
4 142, 145-147, 160, 161).

1 13. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D' D' H having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141,
4 143, 145, 146, 160).

1 14. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D' D' H K L having the
3 amino acid sequences shown in Figure 31 (SEQ ID Nos. 136-
4 139, 141, 143, 145-147, 160, 161).

1 15. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D C/D' D' H having the
3 amino acid sequences shown in Figure 31 (SEQ ID Nos. 136-
4 139, 141-143, 145, 146, 160).

1 16. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D C/D' D' H L having the
3 amino acid sequences shown in Figure 31 (SEQ ID Nos. 136-
4 139, 141-143, 145-147, 160).

1 17. The DNA sequence of claim 1, wherein X
2 comprises polypeptide segments C/D C/D' D' H K L having the
3 amino acid sequences shown in Figure 31 (SEQ ID Nos. 136-
4 139, 141-143, 145-147, 160, 161).

1 18. The DNA sequence comprising coding segments
2 5'FBA,3' coding for polypeptide segments having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136, 138,
4 139).

1 19. The DNA sequence comprising coding segments
2 5'FBA,3' coding for polypeptide segments having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136, 138,
4 140).

1 20. The DNA sequence comprising coding segments
2 5'FEBA,3' coding for polypeptide segments having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-139,
4 163).

1 21. The DNA sequence comprising coding segments
2 '5'FEBA'3' coding for polypeptide segments having the amino
3 acid sequences shown in Figure 31 (SEQ ID Nos. 136-138, 140,
4 163).

1 22. Purified DNA encoding GGF2HB55.

1 23. A polypeptide of the formula

2 WYBAZCX *B*

3 wherein WYBAZCX is composed of the polypeptide
4 segments shown in Figure 31 (SEQ ID Nos. 136-139, 141-147,
5 160, 161, 163); wherein W comprises polypeptide segment F,
6 or is absent; wherein Y comprises polypeptide segment E, or
7 is absent; wherein Z comprises polypeptide segment G or is
8 absent; and wherein X comprises peptide segments C/D HKL,
9 C/D H, C/D HL, C/D D, C/D' HL, C/D' HKL, C/D' H, C/D' D, C/D
10 C/D' HKL, C/D C/D' H, C/D C/D' HL, C/D C/D' D, C/D D' H, C/D
11 D' HL, C/D D' HKL, C/D' D' H, C/D' D' HKL, C/D C/D' D' H,
12 C/D C/D' D' HL, C/D C/D' D' HKL, or C/D' D' HL; provided
13 that, either

14 a) at least one of F, Y, B, A, Z, C, or X is of
15 bovine origin; or
16 b) Y comprises polypeptide segment E; or
17 c) X comprises polypeptide segments C/D HKL, C/D'
18 HKL, C/D D, C/D C/D' HKL, C/D C/D' D, C/D D' H, C/D D' HL,
19 C/D D' HKL, C/D' D' H, C/D' D' HKL, C/D C/D' D' H, C/D C/D'
20 D' HL, C/D C/D' D' HKL, C/D' H, C/D C/D' H, or C/D C/D' HL.

1 24. A polypeptide of claim 23, wherein X comprises
2 C/D HKL polypeptide segments having the amino acid sequences
3 shown in Figure 31 (SEQ ID Nos. 136-139, 141-142, 146, 147,
4 160, 161).

1 25. A polypeptide of claim 23, wherein X comprises
2 C/D D polypeptide segments having the amino acid sequences
3 shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142, 144,
4 160).

1 26. A polypeptide of claim 23, wherein X comprises
2 C/D' H polypeptide segments having the amino acid sequences
3 shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143, 146,
4 160).

1 27. A polypeptide of claim 23, wherein X comprises
2 C/D' HKL polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143,
4 146, 147, 160, 161).

1 28. A polypeptide of claim 23, wherein X comprises
2 C/D C/D' HKL polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143,
4 146, 147, 160, 161).

1 29. A polypeptide of claim 23, wherein X comprises
2 C/D C/D' H polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143,
4 146, 160).

1 30. A polypeptide of claim 23, wherein X comprises
2 C/D C/D' H L polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-
4 143, 146, 147, 160).

1 31. A polypeptide of claim 23, wherein X comprises
2 C/D C/D' D, polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-144,
4 160).

1 32. A polypeptide of claim 23, wherein X comprises
2 C/D D'H polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142,
4 145, 146, 160).

1 33. A polypeptide of claim 23, wherein X comprises
2 C/D D'H L polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142,
4 145-147, 160).

1 34. A polypeptide of claim 23, wherein X comprises
2 C/D D'H K L polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 142,
4 145-147, 160, 161).

1 35. A polypeptide of claim 23, wherein X comprises
2 C/D' D' H polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143,
4 145, 146, 160).

1 36. A polypeptide of claim 23, wherein X comprises
2 C/D' D' H K L polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141, 143,
4 145-147, 160, 161).

1 37. A polypeptide of claim 23, wherein X comprises
2 C/D C/D' D' H polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143,
4 145, 146, 160).

1 38. A polypeptide of claim 23, wherein X comprises
2 C/D C/D' D' H L polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143,
4 145-147, 160).

1 39. A polypeptide of claim 23, wherein X comprises
2 C/D C/D' D' H K L polypeptide segments having the amino acid
3 sequences shown in Figure 31 (SEQ ID Nos. 136-139, 141-143,
4 145-147, 160, 161).

1 40. A polypeptide comprising FBA polypeptide
2 segments having the amino acid sequences shown in Figure 31
3 (SEQ ID Nos. 136, 138, 139).

1 41. A polypeptide comprising FEBA polypeptide
2 segments having the amino acid sequences shown in Figure 31
3 (SEQ ID Nos. 136-139, 163).

1 42. A polypeptide comprising FBA' polypeptide
2 segments having the amino acid sequences shown in Figure 31
3 (SEQ ID Nos. 136, 139, 140).

1 43. A polypeptide comprising FEBA' polypeptide
2 segments having the amino acid sequences shown in Figure 31
3 (SEQ ID Nos. 136-139, 140, 163).

1 44. Purified GGF2HBSS polypeptide.

1 45. A basic polypeptide factor having mitogenic
2 activity stimulating the division of Schwann cells in the
3 presence of fetal calf plasma, said polypeptide having a
4 molecular weight of from about 30 kD to about 36 kD, said
5 polypeptide including within its amino acid sequence any one
6 or more of the following polypeptide sequences:

7 F K G D A H T E B
8 A S L A D E Y E Y M X K
9 T E T S S S G L X L K
10 A S L A D E Y E Y M R K
11 A G Y F A E X A R
12 T T E M A S E Q G A
13 A K E A L A A L K
14 F V L Q A K K
15 E T Q P D P G Q I L K K V P M V I G A Y T
16 E Y K C L K F K W F K K A T V M
17 E X K F Y V P
18 K L E F L X A K

1 46. A basic polypeptide factor having mitogenic
2 activity stimulating the division of Schwann cells in the
3 presence of fetal calf plasma, said polypeptide having a
4 molecular weight of from about 55 kD to about 63 kD, and
5 said polypeptide including within its amino acid sequence
6 any one or more of the following peptide sequences:

7 V H Q V W A A K
8 Y I F F M E P E A X S S G
9 L G A W G P P A F P V X Y
10 W F V V I E G K
11 A S P V S V G S V Q E L V Q R
12 V C L L T V A A L P P T
13 K V H Q V W A A K
14 K A S L A D S G E Y M X K
15 D L L L X V
16 E G K V H P Q R R G A L D R K
17 P S C G R L K E D S R Y I F F M E
18 E L N R X N K P Q N I K I Q K K

1 47. A method for stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide defined by the formula

4 WYBAZCX

5 wherein WYBAZCX is composed of the polypeptide
6 segments shown in Figure 31 (SEQ ID Nos. 136-139, 141-147,
7 160, 161, 163); wherein W comprises polypeptide segment F,
8 or is absent; wherein Y comprises polypeptide segment E, or
9 is absent; wherein Z comprises polypeptide segment G or is
10 absent; and wherein X comprises polypeptide segments C/D
11 HKL, C/D H, C/D HL, C/D D, C/D' HL, C/D' HKL, C/D' H, C/D'
12 D, C/D C/D' HKL, C/D C/D' H, C/D C/D' HL, C/D C/D' D, C/D D'
13 H, C/D D' HL, C/D D' HKL, C/D' D' H, C/D' D' HL, C/D' D'
14 HKL, C/D C/D' D' H, C/D C/D' D' HL, or C/D C/D' D' HKL.

1 48. A method for stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide comprising FBA polypeptide segments having the
4 amino acid sequences shown in Figure 31 (SEQ ID Nos. 136,
5 138, 139).

1 49. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide comprising FBA' polypeptide segments having
4 the amino acid sequences shown in Figure 31 (SEQ ID Nos.
5 136, 138, 140).

1 50. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide comprising FEBA polypeptide segments having
4 the amino acid sequences shown in Figure 31 (SEQ ID Nos.
5 136-139, 163).

1 51. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide comprising FEBA' polypeptide segments having
4 the amino acid sequences corresponding to polypeptide
5 segments shown in Figure 31 (SEQ ID Nos. 136-138, 140, 163)
6 to glial cells.

1 52. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 GGF2HBS5 polypeptide.

1 53. A method of stimulating mitogenesis of a glial
2 cell said method comprising contacting said glial cell with
3 a compound which specifically binds the p185^{erbB2} receptor
4 of glial cells.

1 54. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide, comprising EGFL1, having the amino acid
4 sequence shown Fig. 38, Seq. ID No. 154.

1 55. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide, comprising EGFL2, having the amino acid
4 sequence shown in Figure 39, Seq. ID No. 155.

1 56. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide, comprising EGFL3, with the amino acid
4 sequence shown in Fig. 40, Seq. ID No. 156.

1 57. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide, comprising EGFL4, with the amino acid
4 sequence shown in Fig. 41, Seq. ID No. 157.

1 58. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide, comprising EGFL5, with the amino acid
4 sequence shown in Fig. 42, Seq. ID No. 158, to glial cells.

1 59. A method of stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide, comprising EGFL6, with the amino acid
4 sequence shown Fig. 43, Seq. ID No. 159.

1 60. A method for the prophylaxis or treatment of a
2 pathophysiological condition of the nervous system in a
3 mammal in which said condition involves a cell type which is

4 sensitive or responsive to a polypeptide as defined in any
5 one of claims 1 and 18-22, said method comprising
6 administering to said mammal an effective amount of said
7 polypeptide.

1 61. A method as claimed in claim 60, wherein said
2 condition involves peripheral nerve damage.

1 62. The method as claimed in claim 60, wherein said
2 condition involves glia of the central nervous system.

1 63. A method of stimulating mitogenic activity in a
2 glial cell, said method comprising applying 35 kD
3 polypeptide factor isolated from the rat I-EJ transformed
4 fibroblast cell line to said glial cell.

1 64. A method of stimulating mitogenic activity in a
2 glial cell, said method comprising applying 75 kD
3 polypeptide factor isolated from the SKBR-3 human breast
4 cell line to said glial cell.

1 65. A method of stimulating mitogenic activity in a
2 glial cell, said method comprising applying 44 kD
3 polypeptide factor isolated from the rat I-EJ transformed
4 fibroblast cell line to said glial cell.

1 66. A method of stimulating mitogenic activity in a
2 glial cell, said method comprising applying 45 kD
3 polypeptide factor isolated from the MDA - MB 231 human
4 breast cell line to said glial cell.

1 67. A method of stimulating mitogenic activity in a
2 glial cell, said method comprising applying 7 to 14 kD
3 polypeptide factor isolated from the ATL-2 human T-cell line
4 to said glial cell.

1 68. A method of stimulating mitogenic activity in a
2 glial cell, said method comprising applying 25 kD
3 polypeptide factor isolated from activated mouse peritoneal
4 macrophages to said glial cell.

1 69. A method of stimulating mitogenic activity in a
2 glial cell, said method comprising applying a 25 kD
3 polypeptide factor isolated from bovine kidney to said glial
4 cell.

1 70. A method of stimulating mitogenic activity in a
2 glial cell, said method comprising applying ARIA polypeptide
3 to said glial cell.

1 71. A polypeptide factor having glial cell
2 mitogenic activity and including an amino acid sequence
3 encoded by:-
4 (a) a DNA sequence shown in any one of Figures 28a,
5 28b or 28c (SEQ ID Nos. 133-135, respectively).
6 (b) a DNA sequence shown in Figure 22 (SEQ ID No.
7 89);
8 (c) the DNA sequence represented by nucleotides
9 281-557 of the sequence shown in Figure 28a.
10 (d) a DNA sequence hybridizable to any one of the
11 DNA sequences according to (a), (b) or (c).

1 72. A basic polypeptide factor having a molecular
2 weight, whether in reducing conditions or not, of from about
3 .30 kD to about 36 kD on SDS-polyacrylamide gel
4 electrophoresis, said polypeptide factor having mitogenic
5 activity stimulating the division of rat Schwann cells in
6 the presence of fetal calf plasma, and when isolated using
7 reversed-phase HPLC retaining at least 50% of said activity
8 after 10 weeks incubation in 0.1% trifluoroacetic acid at
9 4°C.

1 73. A basic polypeptide factor having a molecular
2 weight, under non-reducing conditions, of from about 55 kD
3 to about 63 kD on SDS-polyacrylamide gel electrophoresis,
4 said polypeptide factor having mitogenic activity
5 stimulating the division of rat Schwann cells in the
6 presence of fetal calf plasma, and when isolated using
7 reversed-phase HPLC retains at least about 50% of said
8 activity after 4 days incubation in 0.1% trifluoroacetic
9 acid at 4°C.

1 74. A method for the preparation of a polypeptide
2 defined in claim 72 or claim 73, said method comprising
3 extracting vertebrate brain material to obtain protein,
4 subjecting said protein to chromatographic purification
5 comprising hydroxylapatite HPLC and thereafter to SDS-
6 polyacrylamide gel electrophoresis and collecting that
7 fraction therefrom which has an observed molecular weight of
8 about 30 kD to 36 kD and/or that fraction which has an
9 observed molecular weight of about 55 kD to 63 kD if, in
10 either case, subjected to SDS-polyacrylamide gel
11 electrophoresis; in the case of said smaller molecular
12 weight fractions whether in reducing conditions or not, and
13 in the case of said larger molecular weight fraction under
14 non-reducing conditions, and which fraction(s) exhibit(s)
15 mitogenic activity stimulating the division of rat Schwann
16 cells against a background of fetal calf plasma.

1 75. A method as claimed in claim 74, wherein the
2 brain material in said method is pituitary material.

1 76. A method as claimed in claim 75, wherein said
2 pituitary material in said method is bovine.

1 77. A method as claimed in claim 74, wherein said
2 protein used in said method is initially extracted from
3 brain material is first subjected to carboxymethyl cellulose
4 chromatography.

1 78. A method as claimed in claim 74 wherein after
2 said hydroxylapatite HPLC, said method uses cation exchange
3 chromatography, gel filtration, and/or reversed-phase HPLC.

1 79. A method as claimed in claim 74, wherein at
2 each stage of said method biological activity of material
3 obtained is assessed for mitogenic activity stimulating the
4 division of rat Schwann cells in the presence of fetal calf
5 plasma.

1 80. A method for assaying a substances for glial
2 cell mitogenic activity, said method comprising contacting
3 said substance with glial cells in the presence of fetal
4 calf plasma, and the measuring DNA synthesis in said glial
5 cells as a measure of glial cell mitogenic activity.

1 81. An assay as claimed in claim 80, wherein said
2 glial cells are Schwann cells. *B*

1 82. A DNA sequence encoding a polypeptide having
2 glial cell mitogenic activity and comprising:
3 (a) a DNA sequence shown in any one of Figures 28a,
4 28b, or 28c (SEQ ID Nos. 133-135)
5 (b) a DNA sequence shown in Figure 22 (SEQ ID No.
6 89);
7 (c) the DNA sequence represented by nucleotides
8 281-557 of the sequence shown in Figure 28a; or
9 (d) a DNA sequence hybridizable to any one of the
10 DNA sequences according to (a), (b) or (c).

1 83. A polypeptide which is a glial cell mitogen,
2 said polypeptide being encoded by a DNA sequence as defined
3 in claim 82, said polypeptide obtained by a method
4 comprising for the preparation of a glial cell mitogenic
5 factor, said method cultivating modified host cells under
6 conditions permitting expression of said DNA sequence.

1 84. A vector comprising a DNA sequence as defined
2 in claim 82.

1 85. A host cell containing the isolated DNA of
2 claim 84.

1 86. A method for the preparation of a glial cell
2 mitogenic factor, said method comprising cultivating
3 modified host cells as defined in claim 85 under conditions
4 permitting expression of said DNA sequence.

1 87. A polypeptide which is a glial cell mitogen,
2 said polypeptide being encoded by a DNA sequence as defined
3 in claim 1, said polypeptide obtained by a method comprising
4 for the preparation of a glial cell mitogenic factor, said
5 method cultivating modified host cells under conditions
6 permitting expression of said DNA sequence.

1 88. A polypeptide which is a glial cell mitogen,
2 said polypeptide being encoded by a DNA sequence as defined
3 in any one of claims 18-22, said polypeptide obtained by a
4 method comprising for the preparation of a glial cell
5 mitogenic factor, said method cultivating modified host
6 cells under conditions permitting expression of said DNA
7 sequence.

1 89. A method for detecting, in a sample, the
2 presence of a molecule having a receptor binding
3 characteristic of a polypeptide defined in any one of claims
4 23, 40-46, 71-73, or 87, said method comprising the steps of
5 a) contacting said sample with a polypeptide of any
6 one of claims 22, 39-42, 63-65, 72, 73 or 80, along with a

7 receptor capable of binding specifically to said
8 polypeptide, and
9 b) detecting competitive inhibition of the binding
10 of said polypeptide to said receptor as an indication of the
11 presence of a receptor binding molecule in said sample.

1 90. A method for the prophylaxis or treatment of a
2 glial tumor in a patient, said method comprising
3 administering to said patient an effective amount of a
4 substance which inhibits the binding of a factor as defined
5 in any one of claims 23, 40-46, 71-73, or 87 to a receptor
6 therefor.

1 91. A pharmaceutical or veterinary formulation
2 comprising a polypeptide as defined in any of claims 23, 40-
3 46, 71-73, or 87 formulated for pharmaceutical or veterinary
4 use, respectively, together with an acceptable diluent,
5 carrier or excipient and/or in unit dosage form.

1 92. A method for stimulating mitogenesis of a glial
2 cell, said method comprising contacting said glial cell with
3 a polypeptide as defined in any one of claims 23, 40-46, 71-
4 73, or 87.

1 93. A polypeptide, as defined in any one of claims
2 23, 40-46, 71-73, or 87 for use as a glial cell mitogen.

1 94. A method for stimulating mitogenesis of a glial
2 cell in a vertebrate, said method comprising contacting said
3 glial cell with an effective amount of a polypeptide defined
4 in any one of claims 23, 40-46, 71-73, or 87 to glial cells.

1 95. A method for the prophylaxis or treatment of
2 pathophysiological condition of the nervous system in a
3 mammal in which said condition involves a cell type which is
4 sensitive or responsive to a polypeptide as defined in any
5 one of claims 23, 40-46, 71-73, or 87, said method
6 comprising administering an effective amount of said
7 polypeptide.

1 96. A method for the treatment of a condition which
2 involves peripheral nerve damage in a mammal, said method
3 comprising contacting said peripheral nerves with an
4 effective amount of a polypeptide, as defined in any one of
5 claims 23, 40-46, 71-73, or 87.

1 97. A method for the prophylaxis or treatment of a
2 condition in a mammal in which said condition involves
3 demyelination or damage or loss of Schwann cells, for
4 example a neuropathy of sensory or motor nerve fibers, said
5 method comprising contacting said Schwann an effective
6 amount of a polypeptide, as defined in any one of claims 23,
7 40-46, 71-73, or 87.

1 98. A method for the prophylaxis or treatment of a
2 neurodegenerative disorder in a mammal, said method
3 comprising contacting glial cells in a mammal with an
4 effective amount of a polypeptide as defined in any one of
5 claims 23, 40-46, 71-73, or 87.

1 99. A method for inducing neural regeneration
2 and/or repair in a mammal, said method comprising contacting
3 glial cells in a mammal with an effective amount of a
4 polypeptide as defined in any one of claims 23, 40-46, 71-
5 73, or 87.

1 100. A method of inducing fibroblast proliferation,
2 said method comprising contacting said fibroblasts with a
3 polypeptide, as defined in any one of claims 23, 40-46, 71-
4 73, or 87.

1 101. A method of wound repair in mammals, said
2 method comprising contacting said wound with a polypeptide,
3 as defined in any one of claims 23, 40-46, 71-73, or 87.

1 102. A method of making a medicament comprising
2 admixing a polypeptide as defined in any one of claims 23,
3 40-46, 71-73, or 87 with a pharmaceutically acceptable
4 carrier.

1 103. A method for producing an antibody, said method
2 comprising immunizing a mammal with a polypeptide of any one
3 of claims 23, 40-46, 71-73, or 87.

1 104. A method for detecting, in a sample, the
2 presence of a molecule having a receptor binding
3 characteristic of a polypeptide defined in any one of claims
4 23, 40-46, 71-73, or 87, said method comprising the steps of
5 a) contacting said sample with a polypeptide of any
6 one of claims 23, 40-46, 71-73, or 87, along with a receptor
7 capable of binding specifically to said polypeptide, and
8 b) detecting competitive inhibition of the binding
9 of said polypeptide to said receptor as an indication of the
10 presence of a receptor binding molecule in said sample.

1 105. A method for detecting a receptor which capable
2 of binding to a polypeptide as defined in any one of claims
3 23, 40-46, 71-73, or 87, said method comprising carrying out

4 affinity isolation on said sample using a said peptide as
5 the affinity ligand.

1 106. A method for the prophylaxis or treatment of a
2 glial tumor in a patient, said method comprising
3 administering to said patient an effective amount of a
4 substance which inhibits the binding of a factor as defined
5 in any one of claims 23, 40-46, 71-73, or 87 to a receptor
6 therefor.

1 107. A peptide selected from the following:-

2 F K G D A H T E
3 A S L A D E Y E Y M X K
4 T E T S S S G L X L K
5 A S L A D E Y E Y M R K
6 A G Y F A E X A R
7 T T E M A S E Q G A
8 A K E A L A A L K
9 F V L Q A K K
10 E T Q P D P G Q I L K K V P M V I G A Y T
11 E Y K C L K F K W F K K A T V M
12 E X K F Y V P
13 K L E F L X A K
14 V H Q V W A A K
15 Y I F F M E P E A X S S G
16 L G A W G P P A F P V X Y
17 W F V V I E G K
18 A S P V S V G S V Q E L V Q R
19 V C L L T V A A L P P T
20 K V H Q V W A A K
21 K A S L A D S G E Y M X K
22 D L L L X V

1 108. A DNA sequence as shown in any one of Figures
2 28a, 28b and 28c (SEQ ID No. 133-135, respectively).

1 109. A polypeptide encoded by a DNA sequence as
2 defined in claim 108 (SEQ ID Nos. 133-135).

1 110. An antibody to a polypeptide as defined in
2 claim 107.

1 111. A method of investigating, isolating or
2 preparing a glial cell mitogen or gene sequence encoding
3 said glial cell mitogen, said method comprising contacting
4 tissue preparations or samples with an antibody, said
5 antibody prepared as defined in claim 103.

1 112. A method for isolating a nucleic acid sequence
2 coding for a molecule having glial cell mitogenic activity,
3 said method comprising contacting a cell containing sample
4 with a glial cell mitogen specific antibody to determine
5 expression of said mitogen in said sample and isolating said
6 nucleic acid sequence from the cells exhibiting said
7 expression.

1 113. The purified GGF2 polypeptide comprising the
2 amino acid sequence shown in Fig. 45 herein (SEQ ID No.
3 167).

1 114. A purified GGF2 DNA encoding the GGF2
2 polypeptide whose sequences is shown in Fig. 45 (SEQ ID No.
3 167).

1 115. A method for inducing myelination of a neural
2 cell by a Schwann cell, said method comprising contacting

3 said Schwann cell with a polypeptide of any one of claims
4 23, 40-46, 71-73, or 87.

1 116. A method for inducing acetylcholine receptor
2 synthesis in a cell, said method comprising contacting of
3 said cell with a polypeptide of any one of claims 23, 40-46,
4 71-73, or 87.

1 117. An antibody to a polypeptide as defined in
2 claim 23.

1 118. An antibody to a polypeptide as defined in
2 claim 40.

1 119. An antibody to a polypeptide as defined in
2 claim 41.

1 120. An antibody to a polypeptide as defined in
2 claim 42.

1 121. An antibody to a polypeptide as defined in
2 claim 43.

1 122. An antibody to a polypeptide as defined in
2 claim 44.

1 123. An antibody to a polypeptide as defined in
2 claim 45.

1 124. An antibody to a polypeptide as defined in
2 claim 46.

1 125. An antibody to a polypeptide as defined in
2 claim 71.

1 126. An antibody to a polypeptide as defined in
2 claim 72.

1 127. An antibody to a polypeptide as defined in
2 claim 73.

1 128. An antibody to a polypeptide as defined in
2 claim 87. B

1 129. A method of purifying a protein with glial cell
2 mitogenic activity, said method comprising contacting a cell
3 extract with an antibody of any one of claims 117-128.

1 130. A method of treating a mammal suffering from a
2 disease of glial cell proliferation, said method comprising
3 administering to said mammal an antibody of any one of
4 claims 117-128.

1 131. A vector comprising a DNA sequence as defined
2 in any one of claims 1 or 18-22.

Add B² >

Add D' >
Add F-3 >